

**FACTORS ASSOCIATED WITH HEALTH
INFORMATION ENGAGEMENT AMONG
NETIZENS THROUGH FACEBOOK PAGE OF
MINISTRY OF HEALTH MALAYSIA**

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BY

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TABLE OF CONTENT

CONTENTS

ACKNOWLEDGEMENT	ii
TABLE OF CONTENT	iii
LIST OF TABLES	xi
LIST OF FIGURES	xii
LIST OF ABBREVIATIONS	xiii
LIST OF SYMBOLS	xiv
LIST OF APPENDICES	xv
ABSTRAK	xvi
ABSTRACT	xix
CHAPTER 1	1

INTRODUCTION	1
1.1 Health Communication by Public Health Organizations	1
1.2 Importance of Social Media for Public Health.....	3
1.2.1 Reach Diverse Audiences and Tap Hidden Communities	4
1.2.2 Social Media, a New Surveillance Tool	5
1.2.3 Social Media as a Powerful Complimentary Communication Tool for Conventional Methods.....	5
1.2.4 Social Media Provide Direct Engagement with Public.....	7
1.3 Study Rationale	8
1.4 Research Questions	10
1.5 Study Objectives	11
1.5.1 General:.....	11
1.5.2 Specific:	11

CHAPTER 2	12
LITERATURE REVIEW	12
2.1 Characteristic of Post on FB Page.....	12
2.1.1 Types of Health Information on Social Media.....	12
2.1.2 Type of Post on Social Media.....	14
2.1.3 Time of Post on Social Media.....	15
2.2 Associations between Type of Post and Time of Post with Type of Health Information.....	16
2.3 Association between Type of Health Information, Type of Post and Time of Post with Good Engagement Rate.....	17
2.3.1 Association between Type of Health Information and Good Engagement Rate	17
2.3.2 Association between Type of Post and Good Engagement Rate	19
2.3.3 Association between Time of Post and Good Engagement Rate.....	20

2.4	Conceptual Framework	21
CHAPTER 3		22
METHODOLOGY		22
3.1	Study Design	22
3.2	Study Background	22
3.3	Study Area.....	22
3.4	Reference Population	25
3.5	Source of Population	25
3.6	Sampling Frame	25
3.7	Subject Criteria.....	25
3.7.1	Inclusion Criteria	25
3.7.2	Exclusion Criteria	25
3.8	Sample Size	26

3.8.1	Sample Size Estimation for First Objective:.....	26
3.8.1.1	Sample Size Estimation for Type of Health Information	26
3.8.1.2	Sample Size Estimation for Type of Post	27
3.8.2	Sample Size Estimation for Third Objective	28
3.8.3	Sample Size Estimation for Fourth Objective	28
3.8.4	Final Sample Size Calculation	28
3.9	Sampling Method	29
3.10	Source of Data	29
3.11	Definition of Operational Terms	30
3.12	Statistical Analysis	34
3.13	Ethical Issues.....	35
3.14	Study Flowchart	36

CHAPTER 4	37
RESULTS	37
4.1 Characteristic of Post on MOH FB Page	37
4.2 Engagement Rate of posts on MOH FB Page	40
4.3 Association between Type of Post with Type of Health Information	41
4.4 Association between Day Posted With Type of Health Information	42
4.5 Association between Time Posted With Type of Health Information	43
4.6 Association between Type of Health Information, Type of Post, Time of Post and Good Engagement Rate Using Simple Logistic Regression (SLR)	44
4.7 Association between Type of Health Information, Type of Post, Time of Post and Good Engagement Rate Using Multiple Logistic Regression (MLR)	46
4.7.1 Preliminary Final Model and multicollinearity.....	47
4.7.2 Model Fitness	48

CHAPTER 5	51
DISCUSSION	51
5.1 Characteristic of Post on MOH's Facebook Page	51
5.1.1 Type of Health Information Posted.....	51
5.1.2 Type of Post on MOH's FB Page	53
5.1.3 Timing of Post on MOH's FB Page.....	55
5.2 Engagement rate of FB posts on MOH's FB Page.....	56
5.3 Associations between Type of Post and Time of Post with Type of Health Information.....	56
5.4 Factors Associated Between Type of Health Information, Type of Post and Time of Post with Good Engagement Rate among Netizens	58
5.4.1 Association between Type of Health Information and Good Engagement Rate	58
5.4.2 Association between Type of Post and Good Engagement Rate	60

5.4.3	Associated between Time of Post and Good Engagement Rate	63
5.5	Limitations	65
CHAPTER 6		68
Conclusion and Recommendation		68
6.1	Conclusion.....	68
6.2	Recommendation.....	70
6.2.1	Future Research	71
REFERENCES		72
APPENDICES		80
APPENDIX A.....		81
APPENDIX B		82
APPENDIX C		83

LIST OF TABLES

Table 3.1: Summary of Sample Size Estimation for First Objective.....	27
Table 4.1: Characteristic of Post on MOH FB Page (n=2123)	39
Table 4.2: Engagement Rate of Posts on MOH FB Page (n=2123)	40
Table 4.3: Association between Type of Post with Type of Health Information (n=2123).....	41
Table 4.4: Association between Day Posted With Type of Health Information (n=2123).....	42
Table 4.5: Association between Time Posted With Type of Health Information (n=2123).....	43
Table 4.6: Association between Type of Health Information, Type of Post, Time of Post and Good Engagement Rate Using Simple Logistic Regression (SLR).	45
Table 4.7: Association between Type of Health Information, Type of Post, Time of Post and Good Engagement Rate Using Multiple Logistic Regressions (MLR).....	50

LIST OF FIGURES

Figure 2.1: Conceptual Framework of Factors Associated with Good Engagement Rate	21
Figure 3.1: Overview Layout of MOH FB Page.....	23
Figure 3.2: Profile of MOH on their FB Page.....	24
Figure 3.3: Layout of FB Page News Feed.....	24
Figure 3.4: Facebook Engagement Rate Formula (Montells, 2017).....	33
Figure 3.5: Study Flowchart.....	36
Figure 4.1: The ROC of the Final Model Fitness	49

LIST OF ABBREVIATIONS

CCU	Corporate Communication Unit
CDC	Centers For Disease Control And Prevention
CI	Confidence Interval
CAT	Crisis Alert Team
DOSM	Department Of Statistics Malaysia
FB	Facebook
FSQD	Food And Safety Quality Division
STI	Sexual Transmitted Infection
HREC	Human Research And Ethics Committee
IPTK	Institut Penyelidikan Tingkahlaku Kesihatan (Institute For Health Behavioral Research)
LGBT	Lesbian, Gay, Bisexual, And Transgender
MCMC	Malaysian Communications And Multimedia Commission
MLR	Multiple Logistic Regression
MOH	Ministry Of Health Malaysia
MREC	Medical Research Ethics Committee
MS	Microsoft Software
NCI	National Cancer Institute
NMRR	National Medical Research Registry
OR	Odds Ratio
OSHP	Ohio Society Of Health-System Pharmacists
ROC	Receiver Operating Characteristic
SARF	Social Amplification Of Risk Framework
SD	Standard Deviation
SLR	Simple Logistic Regression
SHD	State Health Departments
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

LIST OF SYMBOLS

$>$	More Than
$<$	Less Than
$=$	Equal To
\geq	More Than And Equal To
\leq	Less Than And Equal To
α	Alpha
β	Beta
$\%$	Percentage
Δ	Precision / Delta
m	Number Of Control Per Cases

LIST OF APPENDICES

Appendix A Proforma Form

Appendix B Universiti Sains Malaysia Ethical Approval Letter

Appendix C Ministry of Health (MOH) Ethical Approval Letter

ABSTRAK

Faktor-Faktor Yang Mempengaruhi Penglibatan Netizen Terhadap Informasi Kesihatan Di *Facebook Page* Kementerian Kesihatan Malaysia

Latar Belakang: Kebelakangan ini wujud corak peningkatan tingkah laku manusia dalam mencari informasi kesihatan di atas talian sama ada di Malaysia dan di peringkat global. Platform media sosial kini mendapat pengiktirafan sebagai saluran komunikasi baru untuk organisasi kesihatan awam kerana keupayaannya untuk menyebarkan maklumat lebih cepat dan jangkauan yang lebih meluas. Namun, hanya sedikit yang diketahui mengenai faktor-faktor yang mempengaruhi penglibatan netizens di platform media sosial di Malaysia.

Objektif: Kajian ini bertujuan untuk menentukan jenis maklumat kesihatan, jenis hantaran dan masa hantaran yang disampaikan di Facebook milik Kementerian Kesihatan Malaysia (MOH) antara November 2016 hingga Oktober 2017 dan kadar penglibatannya. Kajian ini juga mahu menentukan hubungan antara jenis hantaran dan masa hantaran bersama jenis-jenis informasi kesihatan serta faktor-faktor yang berkaitan dengan jenis maklumat kesihatan, jenis hantaran dan masa hantaran pada kadar penglibatan yang baik di kalangan netizen.

Kaedah: Kajian ini menggunakan kaedah hirisan lintang dengan data sekunder yang dikumpulkan dari Facebook Insight daripada Facebook Page MOH dari 1 November 2016 hingga 31 Oktober 2017. Kajian ini telah dijalankan antara 1 Januari hingga 30

April 2018. Semua 2123 hantaran yang dipilih secara rawak telah dianalisis menggunakan model regresi logistik untuk mengenalpasti faktor-faktor yang berkaitan dengan kadar penglibatan yang baik.

Keputusan: Dalam analisis kami, jenis informasi kesihatan yang paling lazim adalah promosi organisasi sementara kebanyakan hantaran dibuat pada hari bekerja dan pada masa awal pagi (000H – 0759H) dan jenis hantaran yang paling banyak adalah foto. Majoriti hantaran dalam kajian ini didapati kadar penglibatannya adalah kurang atau pada kadar purata sahaja. Terdapat kaitan yang ketara antara jenis maklumat kesihatan dan hantaran yang kaya media ($p < 0.001$). Namun, tiada kaitan yang ketara antara masa dan jenis informasi kesihatan. Selain itu, kadar penglibatan yang baik dikaitkan dengan pendidikan kesihatan (OR: 3.80, $p < 0.001$), hantaran yang mengandungi risiko komunikasi (OR: 1.77, $p < 0.001$), pada waktu tengahari (OR: 1.76, $p < 0.001$), pada waktu petang (OR: 1.48, $p < 0.001$) dan jenis hantaran adalah video (OR: 3.74, $p = 0.007$) selepas beberapa pembolehubah diselaraskan. Sementara itu, siaran semasa waktu bekerja, pada waktu pagi, menggunakan jenis hantaran seperti pautan, video yang dikongsikan atau foto telah menunjukkan penglibatan negatif di kalangan netizens di FB Page KKM.

Kesimpulan; Keputusan menonjolkan beberapa perkara yang berkaitan dengan penglibatan maklumat kesihatan di kalangan netizen di KKM FB Page. Pendidikan kesihatan, komunikasi risiko, hantaran pada sebelah petang dan video menunjukkan kaitan yang signifikan dengan kadar penglibatan yang baik. Data-data ini mencadangkan pendekatan komunikasi kesihatan yang komprehensif dan strategik

untuk media sosial dapat meningkatkan penglibatan terhadap kandungan kesihatan yang disediakan oleh organisasi kesihatan awam kepada orang ramai.

Kata kunci; media sosial, promosi kesihatan, penglibatan, informasi kesihatan

ABSTRACT

Factors Associated With Health Information Engagement among Netizens through Facebook Page of Ministry Of Health Malaysia

Background: Recently, there is an increasing trend of online health seeking behavior in Malaysia and at global level. In addition, social media platforms are gaining recognition as a new communication channel for public health organizations due to its ability to disseminate information faster and wider reach. Yet, little are known on factors associated to netizens engagement on the social media platforms in Malaysia.

Objective: This study aims to determine type of health information, type of post and time of post conveyed on Ministry of Health (MOH) Malaysia's Facebook (FB) Page between November 2016 to October 2017 and its engagement rate. This study also to determine association between type of post and time of post with type of health information as well as factors associated between type of health information, type of post and time of post on good engagement rate among netizens.

Methodology: This study applied a cross-sectional design with secondary data gathered from Facebook Insight of MOH's FB Page from 1st November 2016 to 31st October 2017. The study was conducted from 1st January until 30th April 2018. All 2123 randomly selected posts were analyzed using logistic regression model to identify factors associated with good engagement rate.

Results: In our analysis, the most prevalence type of health information is organizational promotion whereas most time of posted was noted during early morning (0000H – 0759H) and the most type of post was photo. Majority of posts in this study were considered as poor or average engagement rate. There was significant association between type of health information and media richness ($p<0.001$). Yet, no association was found between type of health information and time of post. Besides, good engagement rate was associated with health education (OR: 3.80, $p<0.001$), risk communication post (OR: 1.77, $p<0.001$), afternoon (OR: 1.76, $p<0.001$), evening post (OR: 1.48, $p<0.001$) and video post (OR: 3.74, $p=0.007$) after few variables were adjusted. In addition, posting a FB post on morning period, using link, shared video or photo showed negative associations with engagement rate among netizens on MOH FB Page.

Conclusion; Results highlight the factors associated with health information engagement among netizens on MOH FB Page. Health education, risk communication, evening post and video post have shown significant associations with good engagement rate. These data suggested a comprehensive and strategic health communication approaches on social media may improve the engagement on the health contents provided by public health organizations to public.

Keywords; social media, health promotion, engagement, health information

CHAPTER 1

INTRODUCTION

1.1 Health Communication by Public Health Organizations

All health organizations are bounded with ten essential public health services which are the guidance for public health activities. The ten essential services are monitor of health status to identify and solve community health problems; diagnose and investigate health problems and health hazards in the community; inform, educate, and empower people about health issues; mobilize community partnerships and action to identify and solve health problems; develop policies and plans that support individual and community health efforts; enforce laws and regulations that protect health and ensure safety; link people to needed personal health services and assure the provision of health care when otherwise unavailable; assure competent public and personal health care workforce; evaluate effectiveness, accessibility, and quality of personal and population-based health services and research for new insights and innovative solutions for health problems (CDC, 2017).

Effective communication is an important element in public health. Health communications have been evolving from conventional methods like direct health campaign through pamphlet, television or radio toward online health campaign and health education on social media platforms like Facebook (FB), Twitter, Instagram, YouTube etc. Hence, public health organizations must quickly adapt with the advancement of technology in communication (Heldman *et al.*, 2013).

Digital technology brings information to the tips of human fingers. There are increasing in trend of online health seeking behavior globally and specifically in Malaysia. One of the reasons is because people perceived usefulness of health information available on internet (Ashraf S.A. and Sharif., 2017). The finding is similar with survey results done by collaborative efforts between Malaysian Communications and Multimedia Commission (MCMC) and Institute for Health Behavioral Research of Ministry of Health Malaysia (MOH) (MCMC, 2017).

In addition, online health seeking behavior on social media specifically are gaining popularity as similar with any online search engines recently (Zhao and Zhang, 2017). More and more people are turning to health information provided on internet and social media platforms. The most common health related information seek by Malaysian netizens in 2017 were symptoms of diseases (91.4 %), healthcare tips (89.8%), disease treatment (83.5%), medications and drug information (73.7%) and finally place to get treatment (63.8%) (MCMC, 2017).

Therefore, public health organizations must galvanize more efforts on how health information can be effectively communicated via social media platforms. Different information such as health promotion, health education or risk communication requires different strategies of communication techniques on social media. Besides, the health information converse to the netizens on social media must be professionally reliable, easy-approach and regularly updated (Ziese and Moebus, 2017).

1.2 Importance of Social Media for Public Health

Social media is defined as web 2.0 platform that allow for the formation and interchange of user-generated content. It connects and allows interaction among netizens in the virtual world (Kaplan and Haenlein, 2010). Recently, social media platforms such as FB, YouTube and Twitter have open a new health communication pathway and dimension. A data of key digital statistics reported by Hootsuite, a leading social media management platform showed that Malaysia have 22 million of active online users which placed this country at third position after Brunei and Singapore in the list. The report also revealed time spend with media among Malaysians were on average 8 hours and 31 minutes on internet via PC or tablet, 3 hours 43 minutes on internet via mobile phone and 3 hours plus 19 minutes on social media platforms (Simon, 2017).

Apart from that, the top three social media platforms in Malaysia are YouTube, FB and followed by WhatsApp application according to the Hootsuite report. However, the finding of MCMC survey in 2017 has shown that the top three platforms were FB followed by Instagram and YouTube. They also found the smartphone was the common device use to access internet and 89.3% of populations were visiting social media platforms in a year (MCMC, 2017).

Social media provides a new platform for patients, doctors and members of the public to interact and discuss either general or specific health issues in the digital world (Moorhead *et al.*, 2013). However, an important finding from the Hootsuite

report was Malaysia has a good social media penetration per population with 71% compared to average Southeast Asian penetration of 47% (Simon, 2017). This provides a vital insight and valuable information for public health organizations to coordinate a strategic health promotion program and reach bigger audience on social media.

1.2.1 Reach Diverse Audiences and Tap Hidden Communities

Malaysia is known for its multi-ethnicity and diverse communities globally. From the population statistical report, 10% populations in Malaysia is a non-citizen including migrants population (DOSM, 2017). Immigrant either legal or illegal pose potential risk for public health threats particularly in the infectious diseases and occupational accidents at workplace (Gushulak *et al.*, 2009).

Apart from that, a lesbian, gay, bisexual, and transgender (LGBT) community is growing in numbers but their presence are rebuff in Malaysia due to religious and cultural objections. However, the community is highly vulnerable of sexual transmitted diseases. According to the Global AIDS Response Progress Report 2016 produced by MOH's HIV/STI Section (2016), the community tend to shun away from the public and make it hard to detect for effective public health intervention due to the stigma and discrimination on them.

Therefore, social media platforms provided a new pathway to reach mass audience or tapping hidden communities like LGBT community or sex workers,

immigrant groups or minorities due to high penetration rate of social media (Card *et al.*, 2018; Liu *et al.*, 2017). This was supported by a systemic review study which found that social media has capability to reach those hidden communities on online platforms for strategic public health interventions (Whitaker *et al.*, 2017).

1.2.2 Social Media, a New Surveillance Tool

Clearly, social media is another new surveillance platform for public health organizations. It allows for online disease surveillance to examine health outcomes and health behaviors within a segmented community that are comparable to standard or traditional measurement (Gittelman *et al.*, 2015).

It also a beneficial tool to monitor rising public health concerns among netizens apart of continuous online health education and promotion (Reynolds, 2010). For example, Food and Safety Quality Division (FSQD) under MOH has established a Crisis Alert Team (CAT) team through mass media notifications to survey any food related issues circulated among the public including on the social media platforms (FSQD, 2012).

1.2.3 Social Media as a Powerful Complimentary Communication Tool for Conventional Methods

One of the central challenges faced by public health organizations during outbreak is how to acknowledge and response carefully on the public anxiety. The gaps in the field of emerging infectious disease communication are demonstrated by

outbreaks such as H1N1 in 2009 and the recent Ebola crisis in Western Africa, indicating a new effective communication framework is essential to disseminate message faster and controlling the outbreaks (Santibañez *et al.*, 2015).

In the Ebola crises, initial few cases were reported on February 9, 2014 yet WHO did not declare an outbreak (MOH Botswana, 2014) until March 23 (WHO, 2014). Hence after two months, there was hardly any news coverage or social media response on the infectious disease. In addition, the overt message delivered by health authorities regarding the risk degree contradicted the covert ones. The overt messages stated that the risk of contracting the disease was very low, stressing that the virus spreads mainly through direct contact with body fluids (Cassooobhoy, 2014).

However few articles described the two infected American aid workers who had returned to the USA and their admission into hospitals with special containment units (Achenbach *et al.*, 2014). This sent a different message to public and later amplified into a public panic in the country. Nevertheless, through integrated health communication strategy between conventional methods like newspaper, television and radio with social media platforms particularly Twitter and Facebook, the CDC, WHO and other related public health organizations were able to respond carefully on the public concern about the Ebola epidemic (Roberts *et al.*, 2017).

1.2.4 Social Media Provide Direct Engagement with Public

The impact of health information can be evaluated by analyzing interactive behaviors of netizens on social media through viral reach (sharing on FB or Twitter), affective evaluation (liking on FB or Twitter) and message deliberation (commenting on FB or Twitter) (Alhabash and McAlister, 2015). Those impacts are generate by four key factors that influence the way people perceive about health information which are authority, privacy, evidence, and incentive appeals (Fritch J.W. and Cromwell., 2001).

Though, there are lots of negative issues surrounding the usage of social media for public goodness. According to studies on the sentiment factor, netizens are more attracted to negative appeals and narrative evidence from untruthful sources compared to positive appeals and statistical evidence provided by authorized organizations (Hansen L.K., 2011). This is also supported by another study which found many unproven therapies are published on the media compared to evidence based therapies (Dempster, 2017).

Thus, the social media platforms allow direct engagement between public health organizations and netizens to share truthful information, dispel distorted information and educating using evidence based information (Eckert *et al.*, 2017). It also provides a real time feedback for public health organizations to evaluate their effective on health communication strategies (Heldman *et al.*, 2013).

1.3 Study Rationale

The dynamic of virality of any public health issues arise on social media requires an immediate response by health organizations in Malaysia to disseminate high impact messages to minimize negative perception among netizens and public panic. Usually, public health organization will approach conventional mass media such as newspaper, television or radio to deliver messages to public. Yet, this method is costly and sometime inefficient. Hence, the social media platforms have proven to be a cost effective tool to fasten dissemination of important health information to public (Lister *et al.*, 2015; Novillo-Ortiz and Hernandez-Perez, 2017).

On February 2017, news spread in local newspapers and social media platforms in Malaysia about a mysterious outbreak occurred in Tanah Merah, Kelantan. A man in late 50's passed away due to severe pneumonia after attended a family gathering in Kajang, Selangor few days prior to his death. Less than 24 hours, his relative was admitted in an intensive care unit of a local hospital for similar complication (Khoo, 2017).

Due to the magnitude of severity of unknown infectious disease at the particular time, initial unknown source of report had claimed that all 40 family members were quarantined to contain the spread of the disease, consequently brought major speculations and anxiety to the family members and local citizens (Kelantan Health State Department, 2017).

Within few hours, the distorted information related to the mysterious infectious disease and quarantine action by health state department went viral into the social media platforms. Unfortunately, delayed in risk communication response to dispel the false news circulated on social media had led to public anxiety (Khoo, 2017). Later it was confirmed the three incidences were due to a leptospirosis disease and not a mysterious respiratory disease outbreak as speculated initially (MOH, 2017). This event portrayed the importance of effective communication strategies and a better understanding the function of social media platform as the new health communication method.

Besides that, there is no study done on the evaluation of health information delivery or engagement analysis of health communication by any health organization on social media in Malaysia. Most of the studies were conducted in developed countries like U.S, Europe and China, the origin country of social media giants like FB and Sino Weibo (a microblogging website similar to Twitter in China).

There are increasing numbers of non-authorized health websites or social media accounts selling unproven alternative medical products and offering unregistered health services to the public on the online platforms. In addition, they also share distorted health tips on different topics causing more confusion among netizens. Health organization site must be a reference point for netizens when they seek health information on the online platform. In order to be relevant and gaining trust among netizens, the health authorities must strengthen their presence on the

digital world by strengthening their social media presence and consistently deliver validated health information to netizens (Heldman *et al.*, 2013).

Therefore, this study may give a new dimension of using social media to look at impact of the health information delivered by health organizations on social media. The findings of this study may facilitate Malaysia's MOH and other health organizations to improve their health communication strategies on social media and encourage health authorities to reach out to their online audiences by increasing their high impact posts on their social media profiles.

1.4 Research Questions

1. What are types of health information, types of post and times of post conveyed on MOH's FB Page from 1st November 2016 till 31st October 2017?
2. What is engagement rate of posts on MOH's FB Page?
3. Is there any association between type of post and time of post with type of health information?
4. Is there any association between type of health Information, type of post, time of post and good engagement rate?

1.5 Study Objectives

1.5.1 General:

To study the engagement of Facebook (FB) posts among netizens on MOH's FB Page.

1.5.2 Specific:

1. To determine type of health information, type of post and time of post conveyed on MOH's FB Page from November 2016 till October 2017.
2. To determine engagement rate of FB posts.
3. To determine associations between type of post, and time of post with type of health information.
4. To determine factors associated between type of health information, type of post and time of post with good engagement rate among netizens.

CHAPTER 2

LITERATURE REVIEW

Focusing on user engagement has become one of priorities for many social media campaign runs by health organizations. Various studies have been conducted to search factors for social media engagement. The engagement can be evaluated by studying interactive behaviors of netizens through viral reach (Share or Retweet), affective evaluation (Like) and message deliberation (Comment) (Alhabash and McAlister, 2015).

2.1 Characteristic of Post on FB Page

2.1.1 Types of Health Information on Social Media

A literature review of 21 articles published in various journals for health information analysis by Zhao and Zhang (2017) revealed diverse types of health information from health education category for certain diseases such as diabetes to public health concerns like pesticide residues in foods and mental health issues etc. The thematic analysis on the same study revealed health education post commonly discussed about cancer related diseases like cervical cancer, chronic diseases particularly diabetes or obesity and medication related issues.

A mixed method case study of single public health organization participation on social media platform for example Sundhed.dk, a FB page of health agency in Denmark showed the highest semantic group was education on general health information and the least was health promotion and risk communication (Hansen *et al.*, 2016). Another study done on evaluation of 809 posts response after the Ebola outbreak news on CDC's FB Page found health promotion topic was the dominant health information compared to risk communication post although during the public panic crisis (Strekalova, 2017).

Meanwhile, studies on multiple health organizations have shown different findings on types of health information. A study on utilization of social media by thirty state health departments (SHD) in US found majority of posts were health related contents including flu, heart disease, nutrition and tobacco etc. followed by event announcements and services offered by the SHD (Thackeray *et al.*, 2012). Moreover, another study of 166 social media of health organizations in US shown organization promotion was the commonest theme followed by health education and cross promotion (Ramanadhan *et al.*, 2013). This was also supported by a descriptive study on 2,597 FB posts from 34 state health departments in US (Jha *et al.*, 2016).

Yet, a comprehensive and extensive study on 45,862 FB posts from 72 FB accounts of 24 US federal health agencies found that the most prevalence semantic group was concept and ideas (54%) and the least topics were genes and devices (both less than one percent) (Bhattacharya *et al.*, 2017).

At the same time, a study focused on hospital based social media platforms found that 45 children's hospitals in US had 35% of their FB posts were hospital promotion, another 35% were education and information post while the rest of the topics were community partnership, fundraising and narratives themes (Wong *et al.*, 2016).

On the other hands, there are also several studies on FB pages created for specific public health issues instead of focusing on single or multiple health organizations participation on social media platforms. In the specific health related FB page like CDC's Breast Cancer FB page, the health information shared were campaigns for knowing the risk factors of breast cancer, education on genetic related cancer and general knowledge (Theiss *et al.*, 2016). This supported by a study on 60 FB pages specific on diabetes topic which shown that 61% of the themes posted were increase knowledge and awareness topic followed by prompt action and demonstrate healthy skills (Rus and Cameron, 2016).

2.1.2 Type of Post on Social Media

A mixed method study on a single health organization FB page; Sundhed.dk, a joint health portal for the public Danish Healthcare Services revealed that text status and link were the most common type of post utilized on their Facebook Page compared to photos or video (Hansen *et al.*, 2016). However, a cross sectional study on 1975 posts on US's National Cancer Institute (NCI) FB page found slightly

different findings which shown that the link was the most popular type followed by photo and video post (Strekalova and Krieger, 2017b).

Meanwhile, a study on multiple health organizations has shown similar findings on types of post. An analysis on social media engagement of FB of US Federal Health Agencies found more than 50% of the posts were link and followed by text status, photo and video (Bhattacharya *et al.*, 2017).

An evaluation on a targeted disease subject on social media for example FB Page of National Cancer Institute (NCI) also found similar findings with health agencies evaluation with links were the popular feature compared to other types (Strekalova and Krieger, 2017a). However, a study on CDC Breast Cancer FB page found the highest prevalence of the type of post was photo continued with link/status and video (Theiss *et al.*, 2016). Different sample size with 1971 posts in NCI FB page evaluation study as compared to 574 samples of CDC Breast Cancer FB page might affect the findings of both studies.

2.1.3 Time of Post on Social Media

One of the findings from a cross sectional study by Sabato *et al.* (2017) on Ohio Society of Health-System Pharmacists (OSHP) FB page in Canada had studied two different time of post which were time of week (Weekday and Weekend) and time of day (Morning and Evening/Afternoon). Their study had shown initially in 2013 the most time posted were during morning or afternoon but a year later in 2014, majority

of posts were seen at the evening period. Another study by Theiss *et al.* (2016) regarding breast cancer campaign held on Breast Cancer FB page owned by US's CDC presented the time of post in a day into seven categories (0000H - 0759H, 0800 – 0959H, 1000H – 1159H, 1200H – 1159H, 1400H – 1759H, 1800H – 2159H, 2200H - 0000H) and the highest prevalence of posting time was during morning period (0800H – 1159H).

Meanwhile, Card *et al.* (2018) studied on diffusion of health messages on social media platforms to targeted gay, bisexual and related sexual worker communities in Canada have divided the time of post into two categories which were time of week (Weekday and Weekend) and time of day (before work; 0100H – 0759H, during work; 0800H – 1659H and after work; 1700H – 0059H). Their study have shown that majority of the FB posts occurred during weekday and during working hours (0800H-1659H).

2.2 Associations between Type of Post and Time of Post with Type of Health Information

A quantitative study conducted by Strekalova and Krieger (2017a) on National Cancer Institute (NCI) FB page found that link were the common type of post for both non-risk and risk related messages. However, relationship between high media richness (photo and video) and both types of health information was significant compared to the low media richness (link and status).

However, another study on 423 posts from various Diabetes-related FB pages were shown negative association between high media richness such as photo post with consequence information such as complications of diabetes etc. (Rus and Cameron, 2016).

2.3 Association between Type of Health Information, Type of Post and Time of Post with Good Engagement Rate

Good engagement rate was determined as a FB post with engagement rate equal or more than one percent while 0.5 percent is an average and less than 0.5 is considered as a poor engagement (Leander, 2011; Lister *et al.*, 2015). However there are lots of factor that may affect the engagement rate. For example semantic, sentiment, type of post, time posted, socio-demographic, internet coverage, device factor and many more. Those examples will be explained further below.

2.3.1 Association between Type of Health Information and Good Engagement Rate

Theme or semantic or content analysis is one of the features for good user engagement on social media platform. Better health information diffusion by public health organizations can promote better healthcare knowledge to the netizens (Bhattacharya *et al.*, 2017). A telephone survey done with 3000 adults in US revealed the two key factors driven the dispersion of online health information was the social media platforms and motivation of public (Fox, 2011). Therefore, few studies were

conducted previously to determine the type of health information as a good engagement factor on the online mediums.

The social amplification of risk framework (SARF) proposed that risk messages translated as threats and harms information to human have better communication engagement depends on four main mechanism which are volume of risk information, ambiguity of information, dramatization of information and symbolic connotations (Kasperson *et al.*, 1988). In two decades, few studies were conducted and found the significant relationship of the SARF theory with communication spreading on social media platforms. A five years analysis of all posts published between 2010 to 2015 had shown a significant association between the risk communication posts and users engagement (Strekalova and Krieger, 2017a). This finding was supported by a study between Ebola and Non-Ebola related post on US's CDC FB Page collected in 2014 (Strekalova, 2017).

A study on performance of 10 diabetes related FB pages in 2013 also revealed similar findings with significant association of consequence information (similar to risk communication post) and users engagement compared to other types of health information (Rus and Cameron, 2016). The findings were backed by a bigger sample size study of 5356 posts collected from 22 Australia's health-related FB pages by Kite *et al.* (2016).

Yet, a study done by Theiss *et al.* (2016) on few FB campaigns ran on CDC Breast Cancer FB page revealed no significant difference between risk or non-risk

related messages with good engagement rate. Another study of engagement among different semantic groups on few US Federal Health Agencies conducted by Bhattacharya *et al.* (2017) had shown FB post with ‘phenomena’ theme will have significant social amplification compared to negatively associated groups such as organizational, occupations and objects etc.

2.3.2 Association between Type of Post and Good Engagement Rate

The Common-Sense Model is another useful theoretical framework other than SARF to understand diffusion of health messages during communication process. It predicts content with imagery element will appeal better social participation (Cameron and Chan, 2008). Few studies have shown significant associations between high media richness like photo and video with good engagement rate.

Studies on health organizations FB pages have found that photos emerged as a good predictor for good engagement rate among netizens compared to other types of post (Bhattacharya *et al.*, 2017; Sabato *et al.*, 2017; Strekalova and Krieger, 2017a; Strekalova and Krieger, 2017b). The finding was supported by an analysis of specific targeted disease content like Diabetes related FB page (Rus and Cameron, 2016).

However, other analysis on specific disease or community related FB page like diabetes and LGBT targeted groups found that a video post had significant engagement rate on social media (Card *et al.*, 2018; Kite *et al.*, 2016; Parackal *et al.*, 2017). The finding was also similar with analysis on a performance of an online

health campaign held by local health departments (LHD) in Utah, USA (Lister *et al.*, 2015).

2.3.3 Association between Time of Post and Good Engagement Rate

A timely dissemination of message can provide a good understanding and feedback between health organizations and public. A post during active human period like working hours and during resting time may have significant impact on the diffusion of health information (Card *et al.*, 2018).

A few studies have been conducted to determine the best time to deliver messages on social media platforms. A study on an online Breast Cancer campaign on CDC's FB page had shown that a post released during early morning and between 2 pm till 6 pm will have a good engagement rate compared to other time periods (Theiss *et al.*, 2016). The finding was almost similar with an analysis of FB page performance on a pharmacy organization analysis in Canada which found that evening posts had significantly greater amplification compared to non-evening posts (Sabato *et al.*, 2017).

However, a latest study on content analysis related with LGBT community in Canada had found that a post during or after working hours had negatively associated with engagement rates among netizens compared to a post made before work time (Card *et al.*, 2018).

2.4 Conceptual Framework

Social media engagement offers a humanoid touch in the digital communication mediums nowadays. However, health organizations are at risk of losing public trust if they do not engage their audience strategically. Otherwise, other non-truthful resources will fill the health information gap (Heldman *et al.*, 2013). Thus, it is worth to study several factors that may impact the health information engagement in Malaysia which were summarized in the conceptual framework shown in Figure 2.1.

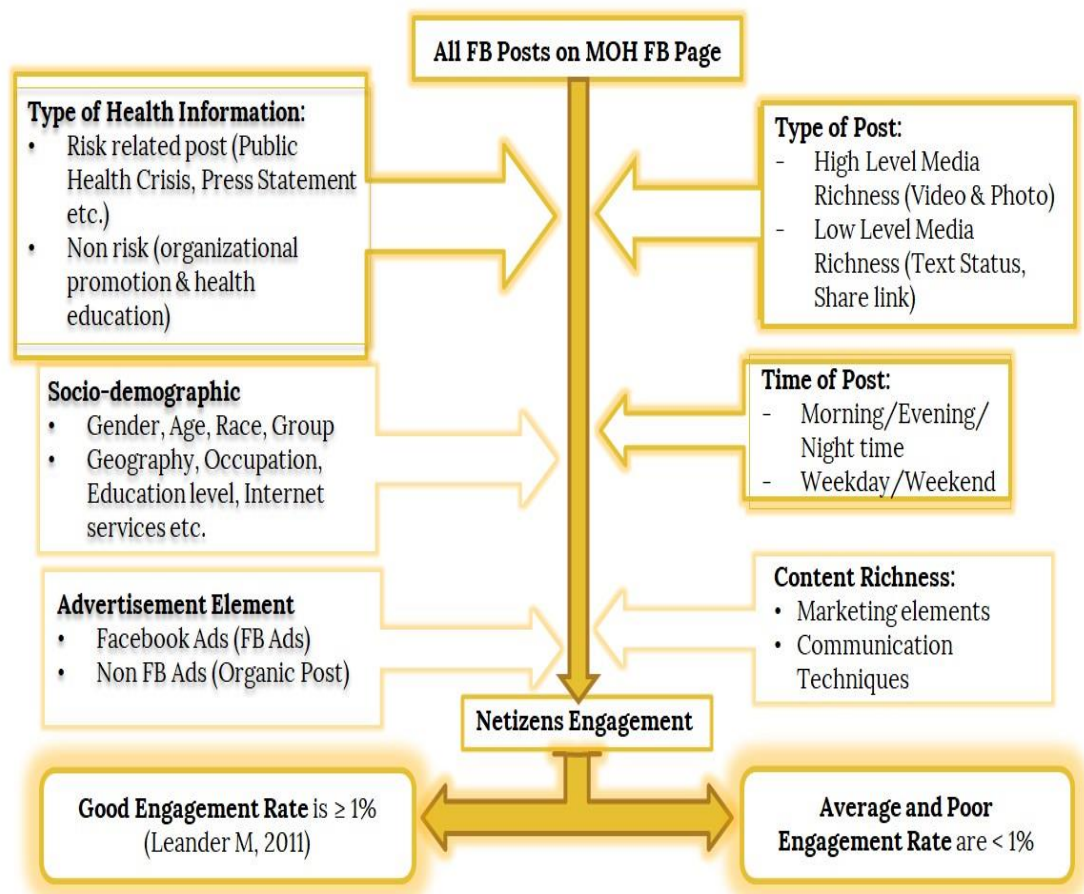


Figure 2.1: Conceptual Framework of Factors Associated with Good Engagement Rate

CHAPTER 3

METHODOLOGY

3.1 Study Design

A cross-sectional study was applied in this study.

3.2 Study Background

The study was conducted for eight months period started from September 2017 till April 2018. It was focused on factors associated with health information engagement among netizens on Facebook Page of Ministry of Health Malaysia from 1st November 2016 till 31st October 2017.

The data collected from Facebook Insight of MOH's FB Page were type of health information, time of post and type of post. Further evaluation obtained for analysis were including the FB page audience, interactive behaviors of post (likes, comments and shares) and progress of the FB page.

3.3 Study Area

This study focused on post engagement on Facebook Page of *Kementerian Kesihatan Malaysia*. The FB page is an official social media platform for Ministry of Health Malaysia and handle by Corporate Communication Unit (CCU) under the

Secretary General's Office directive as shown in Figure 3.1, Figure 3.2 and Figure 3.3.

On 4th March 2018, there were 893, 817 netizens like the MOH's FB Page and made it the second highest in term of numbers of LIKES on Facebook after the police department among official government social media sites when the keyword of "*Kementerian*" was used in the Facebook Search to compare number of Likes between official inter-ministry social media platform in Malaysia (Facebook, 2018).



Figure 3.1: Overview Layout of MOH FB Page

About

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fb_kkm@moh.gov.my

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STORY

OBJEKTIF

Untuk membantu seseorang individu untuk mencapai dan mengekalkan satu taraf kesihatan bagi membolehkannya menjalankan kehidupan ekonomi dan sosial yang produktif

Ini boleh dicapai dengan menyediakan perkhidmatan bercorak penggalakan, pencegahan, rawatan dan pemulihan yang cekap, sesuai dan berkesan dengan memberi penekanan kepada golongan-golongan yang kurang bernasib baik. ... [See More](#)

Figure 3.2: Profile of MOH on their FB Page



Figure 3.3: Layout of FB Page News Feed